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NATIONAL COMMUNICATIONS FROM PARTIES INCLUDED IN ANNEX I TO THE CONVENTION

GUIDELINES FOR THE PREPARATION OF NATIONAL COMMUNICATIONS

Report on the workshop on methodological issues related to greenhouse gas inventories

Note by the secretariat

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I. INTRODUCTION

A. Mandate

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA), at its eighth session, requested the secretariat to organize a workshop with the participation of methodological experts from the roster, as well as from other relevant organizations, to develop proposals to resolve the methodological issues identified by Parties and by the secretariat while processing greenhouse gas (GHG) inventories included in second national communications. The conclusions of such a workshop, and of any workshop organized by the secretariat related to possible additions and/or amendments to the revised guidelines for the preparation of national communications by Annex I Parties[1] (decision 9/CP.2), should be available for the tenth session of the SBSTA (FCCC/SBSTA/1998/6, para. 40 (d)).

2. The SBSTA, at its ninth session, took note of the information provided by the secretariat on the preparation of a workshop to resolve the methodological issues identified by Parties and by the secretariat while processing GHG inventories included in second national communications (FCCC/SBSTA/1998/7 and FCCC/SBSTA/1998/8). It decided that the options set by the secretariat and the initial information submitted by Parties could serve as a starting point for consideration at the workshop. The SBSTA invited Parties to submit initial information related to the options addressed in document FCCC/SBSTA/1998/8 by 1 December 1998 and additional information by 1 March 1999, for compilation into a miscellaneous document (FCCC/SBSTA/1998/9, para. 51 (g)).

3. At the same session, the SBSTA requested the secretariat to include the following topics on the agenda of the workshop, namely: methods, reporting and implications for the review process and procedures. It noted that one objective could be the identification of priorities for consideration by the Intergovernmental Panel on Climate Change (IPCC) task force on national GHG inventories (FCCC/SBSTA/1998/9, para. 51 (d)). The SBSTA requested the secretariat to prepare a report addressing clarifications, additions and amendments to the UNFCCC guidelines, particularly the GHG inventory section, taking into consideration information from workshops, for its tenth session (FCCC/SBSTA/1998/9, para. 51 (e)).

B. Scope of the note

4. This document is intended to respond only to the request of the SBSTA for a report on the workshop as noted in paragraph 1.

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[1] These guidelines are referred to as the UNFCCC guidelines in this report.

II. PROCEEDINGS AND DOCUMENTATION

5. As requested, the secretariat organized a workshop on methodological issues related to GHG inventories. The workshop was held in Bonn from 9 to 11 December 1998. The workshop focused on developing proposals to resolve the methodological issues identified by Parties and by the secretariat while processing GHG inventories included in second national communications (FCCC/SBSTA/1998/7 and FCCC/SBSTA/1998/8), including the analysis of the paragraphs of the inventory section of the UNFCCC guidelines. It also considered comparisons of GHG emission estimates using national and IPCC default methods. Furthermore, the participants were informed on the progress of the ongoing work of the IPCC-OECD-IEA Programme on National Greenhouse Gas Inventories.

6. In order to fulfil the mandate of the SBSTA (see paragraph 3 above), the workshop was split into three working groups, namely, methods, reporting and implications for the review process and procedures.

7. In total, 79 experts attended the workshop. Seventy-three of these were nominated by their respective governments as methodological experts to the roster. Forty-nine experts came from 27 Annex I Parties and 24 came from non-Annex I Parties. Two additional experts from non Annex I Parties were invited, but were not able to attend. In addition, six experts from four relevant intergovernmental organizations attended the workshop.

8. The workshop was chaired by the Chairman of the SBSTA, Mr. Kok Kee Chow (Malaysia). The working group on methods was co-chaired by Mr. J. Penman (United Kingdom of Great Britain and Northern Ireland) and Mr. A. Ajavon (Togo), the working group on reporting was co-chaired by Mr. I. Carruthers (Australia) and Mr. E. L. Rovere (Brazil) and the working group on implications for the review process and procedures was co-chaired by Mr. W. Hohenstein (United States of America) and Mr. R. Boer (Indonesia).

9. The Chairman of the SBSTA opened the workshop recalling the relevant mandates given by the SBSTA. Mr. Masaru Moriya, Secretary-General of the Institute for Global Environmental Strategies (IGES), informed the participants about plans for the Technical Support Unit to the IPCC National Greenhouse Gas Inventories Programme. Ms. Jan Corfee Morlot, Principal Administrator of the Environment Directorate of the Organisation for Economic and Co-operation and Development (OECD), made a presentation on: "Methods and reporting: linkage to issues of review and verification". Representatives of the IPCC-OECD-IEA Programme provided information on the ongoing work related to GHG inventories and presented the new software for the workbook of the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, referred to as the IPCC Guidelines in this note.

10. The secretariat gave an overview of GHG inventory data of second national communications and related analysis and presented two informal papers, namely:

(a) "Comparison of GHG inventories submitted by Parties using own national methodologies with those obtained using the IPCC default methodologies";

(b) "Effects of recalculations of the GHG inventories of the base and subsequent years on assigned amounts and on emission limitation and reduction commitments of Annex I Parties".

11. At the conclusion of the workshop the Chairman of the SBSTA requested the secretariat to make these informal papers available to all Parties. Revised versions of the above-mentioned papers are available as documents FCCC/SBSTA/1999/INF.2 and FCCC/SBSTA/1999/INF.3, respectively.

12. A third informal paper prepared by the secretariat, "Issues and suggestions related to the inventory section of the revised guidelines for the preparation of national communications by Parties included in Annex I to the Convention", was also used to facilitate the discussions of working groups. This paper identified language need in clarifying the inventory section of the UNFCCC guidelines and provided alternatives for consideration. The original issues and suggestions included in that informal paper are reproduced in annex I to this report for reference purposes only. Experts attending the workshop considered these issues and suggestions and made substantial contributions for the improvement of the inventory section of the guidelines. The informal paper also listed the relevant conclusions of the SBSTA and decisions of the Conference of the Parties (COP) adopted after decision 9/CP.2, which are reproduced in annex II to this note. Parties may wish to refer to the annexes when considering the draft of the inventory section referred to in paragraph 13 below.

13. A draft of the inventory section of the UNFCCC guidelines, incorporating clarifications, additions and amendments to this section, has been prepared based on the conclusions of the workshop and submissions from Parties. The draft text has been prepared to facilitate discussion at a workshop, with the participation of representatives from Parties, to be held in Bonn, from 17 to 19 March 1999. The draft text will be revised after this workshop and made available to Parties for consideration at the tenth session of the SBSTA. This draft text is reproduced as an addendum to the present document (FCCC/SBSTA/1999/INF.1/Add.1).

14. The conclusions of the workshop presented below were prepared by the secretariat integrating the individual conclusions of each working group into a single text. These individual conclusions were considered and generally accepted by the participants in plenary sessions during the workshop.

III. PRELIMINARY CONCLUSIONS OF THE WORKSHOP

15. The experts participating in the workshop reached a consensus on the following issues, with the exceptions noted below:

A. Options presented in document FCCC/SBSTA/1998/8[2]

16. **Use of different methods/data**

(a) Parties should be able to use different methods as long as they are consistent with the IPCC Guidelines and conform to any good practice standards which may be developed in the future;

(b) "Good practice" should be defined as follows:

(i) "Good practice" related to preparation of inventories should include information on methods used for calculations, the choice of emission factors and activity data;

(ii) "Good practice" related to inventory management should allow tracking and auditing of the information needed to estimate emissions and to identify where the responsibility lies for each step in the estimates. This might include formal quality assessment and quality control procedures using for example ISO 9000 as a basis but possibly extended to take account of the particular circumstances of emission inventories;

(iii) Good practice in verifying national inventories should include expert reviews and comparisons with relevant international data sources, and empirical data taking into account cost implications; and

(iv) Criteria for good practice should include transparency, completeness, comparability and consistency, and estimation of uncertainties, given that appropriate guidance is developed.

17. **Recalculation of the base year**

(a) Recalculations should be allowed, if they are necessary, consistent and transparent. Detailed criteria for allowing recalculation could include the following:

(i) The entire time series (including the base year) should be methodologically consistent. Recalculations should use activity data collected in a consistent manner;

(ii) Recalculations should improve the accuracy of the inventory, within the context of any agreed good practice guidelines;

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[2] The options discussed here correspond to paragraphs 18-30 of document FCCC/SBSTA/1998/8.

(iii) Recalculations should be fully transparent, that is all changes in data and calculation methods should be described; and

(iv) Recalculations should be subject to more detailed inventory review procedures than provided for under the present system.

18. Some additional criteria were discussed, but without reaching consensus:

(a) Recalculations should only be allowed for sectors other than carbon dioxide (CO_2) from fossil fuel combustion;

(b) Recalculations should only be allowed for a certain period of time;

(c) The direction of recalculations relative to commitments should be checked.

19. **Level of detail of the information as a function of the importance of different GHG emissions from various source categories; level of detail of information as a function of years; formats for presenting inventory data in a transparent way; supplementary information on methods, emission factors and activity data used for ensuring transparency**[3]

(a) The current guidelines have not resulted in transparent and comparable data from all Parties;

(b) Guidelines on reporting of GHG inventories should be separate from, but complementary to that for reporting of national communications;

(c) The reporting of national inventories should include the following types of information: common reporting format, complete national inventory and supplementary information.

20. The common reporting format should meet the principles of transparency, comparability and completeness, provide a basis for effective review and verification and be cost-effective. Guidelines should be developed to provide an improved common reporting format for emission estimates, which would ensure standardized summary reporting. It should summarize information from complete national inventories. The common reporting format should improve comparability between Parties' inventories, allow for improved handling of electronic submissions, provide a rapid assessment of the completeness and comprehensiveness of an inventory, and facilitate review and verification activities.

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[3] These four options were taken up as a group as they are interlinked.

(a) The common reporting format should include:

(i) The IPCC summary and sectoral tables for emission estimates, including modifications as appropriate;

(ii) Tables to report information on activity data and emission factors which underlie the emission estimates, as well as to give an indication of the methods used; and

(iii) The IPCC reference approach for CO_2 from fuel combustion, in addition to the results of the national approach (see paragraph 23 below) for comparison purposes. Similar comparisons could be developed for other sectors and greenhouse gases where possible.

21. There was agreement that a complete national inventory should give more detailed inventory data than provided for in the common reporting format. However, there was no consensus on what should constitute a complete national inventory to be provided under the Convention. Many experts said it should provide sufficient information to allow its reconstruction, including national activity data, emission factors and other assumptions in line with the current request under decision 9/CP.2. Other experts noted that a strict interpretation of this definition could involve very large amounts of data and, therefore, use of documentation standards (rather than full data transfer) could help to ensure access to appropriate information for less significant sources, taking into account both the size and the rate of change of the source. In addition, it was noted that a complete national inventory could include information on the methods used; references to sources of data; and other relevant assumptions and information. It could include an explanation as to why mandatory information was not reported and could also include information on national good practice procedures.

22. As part of achieving transparency in national GHG inventories of Annex I Parties, supplementary information should be made available to the secretariat by a certain date, which is to be decided by the Parties. Supplementary information could include explanation of methods, models, procedures, reference documentation, and information on national inventory systems, data collection and internal verification procedures. This information should be kept up to date in annual submissions. Parties should provide the national GHG inventory annually. Where Parties change their methods, data sources or assumptions, supplementary information should be updated to reflect this. As relevant, recalculations of parts of inventories as a result of changes in methods/data[4] should be provided (see paragraphs 17 and 18 above).

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[4] The term "methods/data" is used here in a broad sense. It refers to the methods, emission factors and assumptions related to use of the activity data used by Parties for estimating their GHG emissions.

23. **Comparison of estimates**

(a) Parties should be asked to report the IPCC reference approach for CO_2 from fuel combustion as a mandatory requirement for comparison with the national estimate, and explain any significant differences, as requested by the IPCC Guidelines;

(b) Parties should be encouraged to report comparisons for other significant greenhouse gas emissions, to the extent possible;

(c) The comparisons with international sources of data on emissions and activity data have a potential value for review purposes.[5]

24. **Reporting of CO_2 equivalent emissions**

(a) Reporting of a table containing aggregate emissions of the six groups of gases mentioned in the Kyoto Protocol expressed in CO_2 equivalents should be mandatory at a summary level[6] without substituting for gas-by-gas reporting;

(b) The guidelines should reflect decision 2/CP.3, which states that 1995 IPCC global warming potentials (GWPs) over a 100-year time horizon should be used. Other time horizons may not be necessary;

(c) For the synthetic gases, these GWPs should be applied to desegregated emissions, where available.

25. **Estimating and reporting of hydrofluorocarbon (HFC), perfluorocarbon (PFC) and sulphur hexafluoride (SF_6) emissions**

(a) The reporting of disaggregated data for sources and species of these gases should be mandatory;

(b) With regard to the affirmation in decision 2/CP.3 that actual emissions of HFCs, PFCs and SF_6 should be estimated, where data are available,[7] the current statistical difficulties and the scarce availability of data to estimate these emissions were noted.

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[5] Comparisons with international sources of data on emissions and activity data were not discussed at this workshop. Experts noted, however, the potential value of these comparisons and suggested that reporting requirements in this area should be reconsidered when the report requested by the Subsidiary Body for Implementation (SBI) at its ninth session (FCCC/SBI/1998/7, para. 21 (e)) becomes available at its tenth session.

[6] Experts agreed that the reference to summary level needs to be further defined.

[7] A discussion as to whether reporting of potential emissions should be mandatory for Parties not in a position to report actual figures, did not go beyond the conclusion of the fourth session of the SBSTA, which encourages these Parties to report potential emissions.

26. **Reporting of bunker emissions**

(a) Separate aviation and marine bunkers should be reported as set out in the IPCC Guidelines in a fully transparent manner. The lack of good activity data and the need for more work on collection of accurate bunker data constrains the reporting of emissions from bunkers according to the guidelines;

(b) A key element in the methodological work[8] is achieving a clear separation between domestic marine and aviation emissions (which are to be included in the national total), and international aviation and marine emissions (which are to be reported separately).

27. **Reporting of ozone precursors and sulphur dioxide (SO_2)**

(a) Current reporting of emissions of these gases should be continued. It was noted that many Parties report these emissions in other forums.

28. **Special needs of countries with economies in transition (EIT)**

(a) Although it was noted that identified data and institutional needs were not uniform among all EIT countries, several common problems exist. Among the identified problems were:

(i) Data availability for the base year;

(ii) Substantial changes since the base year including territorial changes;

(iii) Transition of the old statistical systems to other standards;

(iv) Lack of national emission factors; and

(v) Lack of a focal point to ask methodological questions related to inventories.

(b) Some proposed actions to overcome these problems included:

(i) Promoting the knowledge transfer related to good practice when preparing GHG inventories;

(ii) Creating a technical unit of advisers; and

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[8] The experts noted that as part of its ongoing methodological work, the secretariat is producing a separate paper related to bunker fuels which will be available at the tenth session of the SBSTA (FCCC/SBSTA/1999/INF.4).

(iii) Developing and organizing a network of EIT countries to assist each other and to increase capacity building.

29 **Uncertainty**

(a) It was noted that methodologies for estimating and reporting on uncertainties are currently under consideration by IPCC, following the request made by the SBSTA at its sixth session (FCCC/SBSTA/1997/6, para. 28 (b)). When this task is completed, additional information may be required by the SBSTA, depending on the advice given by the IPCC;

(b) Meanwhile, until such time as final guidance is adopted by the SBSTA, the experts felt that:

(i) Parties should be encouraged to report transparent information on uncertainties, including in both emission factors and underlying activity data. This information could be valuable, both to other Parties for comparative purposes, and as an input to the IPCC activity;

(ii) Quantifying uncertainties would be a useful means of prioritizing work needed to improve emission estimates, of increasing the usefulness of national inventories for scientific work, and of helping to justify the need for recalculations. In addition, it is possible that uncertainty data may be relevant to methodological work needed to implement the Kyoto Protocol.

B. Other issues and suggestions related to the inventories section of the UNFCCC guidelines[9]

30. **Base year**. The guidelines should be in line with the provisions of the Kyoto Protocol, which allow Parties to choose 1995 as a base year for HFC, PFC and SF_6 emissions.

31. **Uncertainty**. The revised UNFCCC guidelines need to clearly separate uncertainties related to inventories and those related to projections, due to their different characteristics.

32. **Background information**. The issue of background information provided by Parties in a language other than the working language of the secretariat should be considered at the SBSTA workshop with the participation of representatives from Parties, to be held in Bonn, 17-19 March 1999.

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[9] The headings of this section correspond to the main items of the inventories section of the UNFCCC guidelines. Paragraphs 4 to 9 of the "cross-cutting issues" section of the guidelines were also considered because they are related to inventories. Issues and suggestions related to each of these paragraphs were presented in the informal paper referred in paragraph 12 above. They are reproduced in annex I to this note.

33. **Information on new GHGs**. Parties should be encouraged to provide information about very new GHGs once identified.

34. **Adjustments.** The wording of the current guidelines should be revised according to the relevant conclusions of the SBSTA, namely, paragraph 53 of the report on the fourth session of the SBSTA (FCCC/SBSTA/1996/20)[10] and the last two sentences of paragraph 21 (b) of the report on the seventh session of the SBSTA (FCCC/SBSTA/1997/14).[11]

35. **Detailed information on feedstocks.** It was recalled that the UNFCCC guidelines should provide the principles, rather than technical detailed instructions.

36. **Indicators.** It was noted that the paragraph referring to indicators could be placed in the section on national circumstances.

37. The discussion of issues and suggestions[12] related to the use of GWPs, transparency, years to report, use of different methods, information to allow reconstruction of inventory, and bunkers was covered in the discussion on options set up by document FCCC/SBSTA/1998/8 (see paragraphs 15-29 above).

38. Information on sequestration and emissions of carbon in the land-use change and forestry sector was not discussed, in the light of the ongoing work by the IPCC and the SBSTA on methodological issues related to the estimation and reporting of emissions by sources and removals by sinks from that sector.

C. Review process and procedures

39. Experts discussed issues related only to the "review" of greenhouse gas inventories, not the broader issue of how national communications should be reviewed. Ways were considered to improve the review process, taking into account the evolving needs of the Convention, in the light of the Kyoto Protocol. There was general agreement that the existing GHG inventory review process needs to be improved as an inherent part of a technical process of ensuring high quality inventory data.

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[10] "The SBSTA stressed the necessity of reporting inventories in mass units without adjustments according to paragraph 12 of the annex to decision 9/CP.2. Adjustments are regarded as important information in relation to the monitoring of emission trends and the performance of policies and measures, and should be reported separately."

[11] "[For those purposes,] individual Parties may choose whether adjustments are applied, in addition to reporting unadjusted inventory data, and if so, which methods are chosen. The SBSTA encouraged Parties to share with others their experience with the application of adjustments."

[12] See footnote 9.

40. In addition to the mandate related to the workshop as set out in paragraphs 1 to 3 above, when discussing options for the review process, consideration was also given to relevant SBSTA and SBI conclusions and COP decisions. These include:

(a) Conclusions of the SBSTA at its ninth session, which invited Parties to submit information on, and the secretariat to prepare a report on, elements of a review process related to GHG inventories, including in-depth reviews (FCCC/SBSTA/1998/9, para. 51 (f));

(b) Conclusions of the SBI at its ninth session, which invited Parties to submit views on the scope and modalitites of the review process for third national communications including in-depth reviews, in the context of the Kyoto Protocol. Further, the secretariat was requested to prepare a document for the future review process, taking into account the views of Parties and the relevant requirements of the Kyoto Protocol (FCCC/SBI/1998/7, para. 21 (d));

(c) Decision 11/CP.4, which requests the subsidiary bodies to consider the scope, modalities and options for the review process, including the review of annual inventory information and the need for more thorough consideration of the national circumstances and reporting requirements under the Kyoto Protocol, with a view to adopting revised guidelines for the review process at the sixth session of the COP (FCCC/CP/1998/16/Add.1, decision 11/CP.4, para. 3).

41. Numerous ideas were put forth, but given the preliminary nature of the discussion, they should not be viewed as conclusive. The possible options to improve the review process were structured according to the following elements: pre-submission, submission and initial checks, synthesis and assessment report on inventories, and individual review of inventories.

1. Pre-submission

42. The experts discussed several options for internal national reviews, prior to submission of data to the UNFCCC secretariat, including the potential role of the national inventory authorities and other organizations in such a process. Initially, Parties could review their own inventory through comparisons with their previous submissions in order to pick up inconsistencies and potential errors. In this regard, Parties would need to archive all their previous submissions. They could also make improvements to their inventories by considering examples of best practice from other Parties, if such information was available. Guidelines for Parties to conduct internal reviews could, potentially, be provided by an international body such as the IPCC. External auditors could be involved at this stage of the review process. These might be national and/or international teams which could involve non-governmental experts. If such teams were to be established there could also be a certification process to ensure they meet appropriate standards. Parties may require some guidance on how to handle conflicting advice from external reviewers.

43. The experts noted that while internal reviews are to be encouraged, at this stage they should not be mandated; and currently there is no need for secretariat involvement in such processes.

2. Submission and initial checks

44. Experts agreed that the provision of a common reporting format to be submitted electronically would facilitate an improved review process. Furthermore, the group noted that the work of the IPCC on developing electronic computational tools may be of use. Experts also agreed that to facilitate a detailed review of inventories during the whole review process, Parties could be requested to indicate for each part of the inventory the source of underlying activity data and emission factors. This would make it easier for reviewers to request appropriate background material.

Checking procedure

45. As a first component of the review process, the group proposed an initial checking procedure of emission inventories, by the secretariat. At this stage, the main purpose would be to examine completeness and consistency in the data and supporting information. One option is to investigate the extent of adherence to the UNFCCC reporting guidelines. Previous submissions could also be used in the checking procedure to pick up potential anomalies. Beyond checking the basic availability and consistency of the data, the secretariat could also be asked to check aspects related to quality.[13]

46. The checking procedure should provide an opportunity for the secretariat to ask questions related to the inventory submissions. There could be an agreed timetable, following submission, during which the secretariat could provide such questions to individual Parties. Parties could then provide feedback to the secretariat within a fixed period such as 30 days.

47. Depending on the extent of the checking procedure envisaged, this may require a new mandate for the secretariat.

Status report

48. Based on the checking procedure, followed by the feedback by Parties, the secretariat could then release an initial report on the status of each submission. Drawing on the UNFCCC guidelines, potential elements of a status report could be: which gases have been included and at what level of disaggregation, for which years data are available, whether all sources have been reported, whether the submission was on time, whether the GWP values have been used correctly, whether the common reporting format has been submitted (by sector), whether the IPCC reference approach has been provided and whether supporting documentation has been

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[13] The option for the secretariat to check aspects related to quality was mentioned, but was not examined at the workshop.

provided etc. Such a status report, for each of the elements, could state where the UNFCCC guidelines indicate "should", "should to the extent possible", "are encouraged", "where available" or "may" etc. The status report could be posted on the World Wide Web.

3. Synthesis and assessment report on inventories

49. Experts agreed that while the current compilation of inventory data is valuable, there is a need for further analysis which could take the form of an annual synthesis and assessment report. This may require a new mandate for the secretariat.

50. At the synthesis and assessment stage, the main purpose of review would be to check for comparability, transparency and consistency of the inventory data. The focus of the report would be on cross-cutting issues and could identify issues common to groups of Parties. The secretariat could draw on the roster of experts in preparation of the report, including the assessment of generic issues. Different themes could be highlighted in different years. For example, the report could evaluate comparisons of emission factors including regional differences in defaults and provide this information to the IPCC inventory technical support unit.[14]

51. Where synthesis and assessment indicates issues, outliers and/or inconsistencies for a particular Party this information could be used in individual country reviews (see paragraphs 52-56 below), for example if emission factors differ considerably from those of other Parties with similar characteristics. In a year when supplementary information was available from the national communication, this could also be incorporated in the synthesis and assessment report. The synthesis and assessment report could adapt to the changing needs of the Parties as negotiations progress under the UNFCCC and the Kyoto Protocol.

4. Individual review of inventories

52. Currently reviews of individual country inventories occur only as part of the in-depth review of national communications. The group recognized the limitations of this existing process. In particular, the in-depth reviews of national communications generally only involve one inventory expert, inventory discussions last at most one day and preparatory work may not be sufficient.

53. Experts recognized that in addition to more detailed synthesis and assessment, the review of individual inventories needs to be enhanced. At this stage, individual reviews could serve to improve reliability, accuracy, and the quality of inventories for individual countries and identify the application of good practices on inventory preparation. Information from reviews could be used by Parties, the secretariat, the IPCC and other bodies to build capacity and improve methodologies. The experts discussed three basic options:

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[14] The secretariat notes that it currently undertakes these types of analyses of GHG data, i.e. synthesis and assessments, under its mandates related to methodological issues. Its mandate related to compilation and synthesis of national communications is less expansive.

(a) Firstly, individual reviews of national inventories could be conducted annually. These could vary over time in scope so they may be more in-depth some years than others;

(b) Secondly, individual reviews could be conducted on a less frequent basis, perhaps prior to when the in-depth reviews are due to be conducted; and

(c) Thirdly, individual reviews of inventories could occur at a set period, for example, every three to four years.

54. Reviews could be conducted either by sending inventory materials to experts in a single location or through a series of country visits involving experts. The teams of experts could be drawn from the roster and intergovernmental organizations (IGOs), perhaps divided up by gas, source and sector, according to expertise. Another option would be to link individual reviews to the in-depth reviews or hold them separately. In the case of annual reviews, it might be possible to tie in review of individual inventories with the synthesis and assessment report of the inventory data.

55. There are several possible elements related to individual country reviews. The review team could attempt to replicate parts of the inventory, prior to a visit. There could be a list of questions that are asked for every aspect of an inventory. There could be prioritization of which aspects are reviewed in-depth and this could change for each review. The uncertainty associated with emissions from particular sources could be taken into account in deciding whether a particular source should be considered in-depth. There could be data comparison[15] with other international organizations. There could be consideration of whether good practices are in place.

56. There could be instructions/guidelines for review and an agreed review structure to ensure consistency across national reviews. There could be orientation for experts at the secretariat, for example, prior to the reviews. Furthermore, a minimum standard of qualification may be required.

D. Other issues

57. The experts considered the relationship between revision to the guidelines and development of national systems as required under the Kyoto Protocol. It was noted that present revisions may build a foundation for the level of documentation that will be needed for a national system.

58. It was noted that confidentiality could be an issue that may arise in some circumstances with respect to reporting information of GHG emissions of different gases in different sectors at certain levels of disaggregation.

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[15] See footnote 5.

59. It may be necessary to include a glossary of key terms (transparency, consistency, comparability, good practices, etc.) in the guidelines.

60. The experts identified several tasks which could be carried out by the IPCC. The experts:

(a) Noted the current statistical difficulties and the scarcity of data for estimating and reporting HFC, PFC and SF_6 emissions, and identified this as an issue for the relevant IPCC inventory workshop on better practice inventory methods;

(b) Suggested that the IPCC could identify additional new GHGs once they appear;

(c) Suggested that the issue of providing proxies for any missing base year data in EIT countries should be addressed under the IPCC-OECD-IEA Inventories Programme;

(d) Suggested that the issue of providing detailed information on feedstocks could be handled over to sectorial experts of the IPCC Inventories Programme for further discussion;

(e) Noted the importance of quality assurance and quality control procedures in preparation of national GHG inventories and that consideration of such procedures is included in the IPCC-OECD-IEA Inventories Programme.

61. The experts requested improving the links and sharing of information and data between the secretariat and the IPCC. They also considered that an enhanced review process of the inventory data by the secretariat and the SBSTA may facilitate the sharing of this information with the IPCC.

IV. SUGGESTIONS FOR TASKS TO BE CARRIED OUT BY THE SECRETARIAT[16]

62. The experts suggested that the secretariat begin the preparation of a common reporting format for reporting and submitting the official national inventory data and that this should be done in consultation with the IPCC-OECD-IEA Inventories Programme. Experts further noted that it would be useful to have a draft available for the UNFCCC workshop with participation of representatives from Parties to be held in Bonn, from 17 to 19 March 1999.

63. The experts agreed that the informal paper entitled "Comparison of GHG inventories submitted by Parties using own national methodologies with those obtained using the IPCC default methodologies" is a useful contribution to the work on methodological issues related to GHG inventories. They encouraged the secretariat to circulate the paper to the roster of experts

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[16] The experts identified several tasks that could be carried out by the secretariat if resources are available. They are grouped together in this section of the report to facilitate possible further action by the SBSTA.

to get feedback and include it in secretariat documents to be prepared for consideration by the SBSTA, at its tenth session.[17]

64. Given that the preliminary work by the secretariat on "Effects of recalculations of the GHG inventories of the base and subsequent years on assigned amounts and on emission limitation and reduction commitments of Annex I Parties"[18] and by Parties indicates that recalculation can affect significantly the estimation of the assigned amount, and the way in which commitments will be met under the Kyoto Protocol, the experts suggested that this issue deserves more study by the secretariat and the Parties.

65. The experts suggested that the SBSTA consider the common technical problems of EIT countries. They also suggested the secretariat prepare a detailed assessment of each Party's needs related to these problems which have emerged from the analysis of the national communications already available and in-depth reviews to be conducted.

66. The experts suggested that the secretariat could further facilitate access to inventory data by the general public by providing improved access to data for on-line searches by gas, source, year, country etc. Improving data access in this way would not require a new mandate for the secretariat.

67. The experts also suggested that the secretariat could draw up a proposal on processes for the handling of confidential data and make it available for the consideration of the SBSTA.

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[17] Document FCCC/SBSTA/1999/INF.2.

[18] Document FCCC/SBSTA/1999/INF. 3 (cf. paragraph 11 above).

Annex I

ORIGINAL ISSUES AND SUGGESTIONS PREPARED FOR THE WORKSHOP

1. The paragraphs below refer to specific sections in the UNFCCC revised guidelines for the preparation of national communications by Parties included in Annex I to the Convention (decision 9/CP.2) with cross-references to subsequent COP decisions and SBSTA conclusions. Quoted text of the guidelines is presented in *italics* followed by issues and suggestions.

2. Paragraph 4:[1]

> *Quantitative data related to inventories and projections of greenhouse gas emissions and removals should be presented on a gas-by-gas basis in units of mass (Gg) with emissions by sources listed separately from removals by sinks, except in cases where it is technically impossible to separate information on sources and sinks in the area of land-use change and forestry.*

The content of this paragraph is clearly defined and may not need further revision.

3. Paragraph 5:

> *In addition to communicating emissions in units of mass, Parties may choose also to use global warming potentials (GWPs) to reflect their inventories and projections in carbon dioxide-equivalent terms, using information provided by the Intergovernmental Panel on Climate Change (IPCC) in its Second Assessment Report. Any use of GWPs should be based on the effects of the greenhouse gases over a 100-year time horizon. In addition, Parties may also use other time horizons.*

Issues	Suggestions
The reporting of estimates in terms of aggregate GHG emissions expressed in terms of CO_2 equivalent is currently optional. (See also annex II, para. 9(3))	The additional and mandatory reporting of aggregate GHG estimates in terms of CO_2 equivalent using IPCC 1995 GWPs with a 100-year time horizon (decision 2/CP.3) could be required. This should not substitute the reporting of individual GHGs on a gas-by-gas basis in mass units.
It is optional to also report using GWP values with other time horizons.	The reporting of other time horizons may not be necessary. Guidance may be needed on how to report emissions on a sectoral/national level, as well on the reporting formats.

[1] Paragraphs 4 to 9 are listed in the UNFCCC guidelines under the heading "Cross-cutting issues". Since they contain relevant information related to GHG inventories, they are considered in this note.

4. Paragraph 6:

Taking into account the provisions of Article 4.2(b), the year 1990 should be the base year for inventories.[2] *The provisions of Article 4.6 are relevant in this context for the Parties included in Annex I undergoing transition to a market economy, and those Parties in their communications should propose to the Conference of the Parties the of flexibility they are seeking pursuant to that Article.*

This paragraph may not need further revision, but it could be updated by dropping the referen to the Intergovernmental Negotiating Committee.

5. Paragraph 7:

The transparency of national communications is fundamental to the success of the process for the communication and consideration of information. This transparency particularly important for inventories of emissions and removals of greenhouse gases and for projections and assessments of the effects of measures.

Issues	Suggestions
The paragraph highlights the importance of transparency for the reporting of inventories in the context of the Convention	It may be necessary to mention other important attributes of inventories in other paragraphs, such as consistency, comparability, completeness, and accuracy.

6. Paragraph 8:

When national communications present quantitative data related to inventories and projections of greenhouse gas emission and removal levels, the level of uncertainty associated with these data and underlying assumptions should be discussed qualitativ and, where possible, quantitatively.

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[2] In accordance with the decisions of the Intergovernmental Negotiating Committee for a Framework Conven on Climate Change at its eighth session.

Issues	Suggestions
The paragraph is not precise.	It may be useful to request the IPCC overview table. This is also important to ensure completeness in reporting of national GHG inventories. The provision of specific additional information by Parties could be encouraged while the SBSTA considers the outcome of the ongoing work of the IPCC-OECD-IEA Inventories Programme on uncertainties and "good practices". Some additions to the guidelines may be expected following consideration of the above-mentioned work by the SBSTA.

7. Paragraph 9:

Parties should provide additional relevant background information to the secretariat, if possible, but not necessarily, in a working language of the secretariat. Such information should include documentation on emission factors used, activity data, and other relevant assumptions, as well as technical reports on the projections analysis.

Issues	Suggestions
This question relates directly to the inventories/projections section of the UNFCCC guidelines, but is currently included under "cross-cutting issues". The information required for inventories and projections may be different.	This question could be covered in the respective inventories/projections sections, and not under "cross-cutting issues".
Many Parties do not provide the appropriate background information. The scope of the background information varies among Parties.	The basic and supplementary background information to be provided regarding emission factors, activity data and other assumptions should be precisely defined. This could differ for gases and source categories.
The term "relevant assumptions" is not well defined in the guidelines.	Guidance on formats (IPCC standard tables, worksheets, other forms) to provide the information.

8. Paragraph 11:[3]

Article 12.1(a) requires that communications include a national inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol. At a minimum, information should be provided on the following greenhouse gases: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and sulphur hexafluoride (SF_6). Parties should also provide information on the indirect greenhouse gases carbon monoxide (CO), nitrogen oxides (NO_x) and non-methane volatile organic compounds (NMVOCs), and are encouraged to provide data on sulphur oxides. As new gases with significant global warming potentials are identified, they should be included in the communications. Where methodological or data gaps exist, information should be presented in a transparent manner.

Issues	Suggestions
The current reporting of HFC, PFC and SF_6 emissions is inconsistent and incomplete.	Guidelines on how to report HFCs, PFCs and SF_6 (actual/potential emissions or both; disaggregated by substance) are necessary. All COP decisions and SBSTA conclusions need to be integrated into consistent guidance.
Additional guidance on how to report these emissions was given by the SBSTA (see annex II, para. 3) and the COP (see annex II, para. 9(2)).	Specific formats could be developed to provide this information. The reporting of these gases may deserve an independent paragraph in the guidelines.
The reporting of SO_2 is optional.	Inconsistencies in providing information among Parties may be avoided by being more specific or omitting optional requirements.
The guidance on how to present data on new gases with significant GWPs is not specific enough.	A definition of "significant" is needed, as well as guidance on how to include these data in reporting tables.
The guidance on how to present data gaps is not sufficiently specific.	A set of definitions on how to report gaps in the data (not occurring, not estimated, not available) may be useful to ensure consistency and transparency.

9. Paragraph 12:

If Parties carry out any adjustments to inventory data, for example for climate variations or trade patterns in electricity, these adjustments should be reported in a transparent manner, with clear indications of the method followed. Both adjusted and unadjusted data should be provided.

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[3] Paragraphs 11 to 19 are those included in the UNFCCC guidelines under the heading "Inventories".

Issues	Suggestions
Both adjusted and unadjusted data are given the same importance in this paragraph (see annex II, paras. 3, 7, 8)	The text needs to be consistent with the SBSTA conclusions. It may be necessary to highlight that inventories have to be reported in mass units without adjustments and that adjustments should be reported separately, according to the relevant conclusions of the SBSTA (see annex II, para. 4).

10. Paragraph 13:

Parties should also provide greenhouse gas inventory information for years subsequent to 1990. Data should be provided for each year (where appropriate, updated) for the period 1990-1994 and, where available, for 1995, for the second national communication. Subsequent national communications should provide data from 1990 and up to three years prior to the submission year, and, if possible, later years. If possible, data should also be provided in an electronic version which is compatible with the requirements of the secretariat.

Issues	Suggestions
This language is outdated and overtaken by subsequent COP decisions and SBSTA conclusions (see annex II, paras. 6, 16).	The language should be made consistent with subsequent COP decisions and SBSTA conclusions.

11. Paragraph 14:

The IPCC Guidelines for National Greenhouse Gas Inventories should be used in estimating, reporting and verifying inventory data. These inventory guidelines offer a default methodology available to any country that wishes to use it. Countries that already have an established and comparable methodology could continue to use that methodology, provided that they include sufficient documentation to back up the data presented. For Parties using the CORINAIR methodology or other "bottom-up" approaches, this would entail providing activity data and disaggregated emission factors as well as details of the correspondence between the IPCC source categories and those of the CORINAIR or other "bottom-up" approach used. Standard tables and formats recommended in the IPCC Guidelines for National Greenhouse Gas Inventories should be used for presentation of data.

Issues	Suggestions
The IPCC Guidelines allow great flexibility to use other compatible methodologies, different tiers and emission factors.	A specific description of how the IPCC Guidelines have been used may need to be requested. This description may also be necessary for Parties which use national methods for estimating their inventories.
The requested documentation from Parties that use CORINAIR or other bottom-up approaches for estimating their GHG inventories is difficult to process. The information is generally not provided by many Parties.	It may be necessary to define what is the corresponding information necessary to ensure transparency that Parties using CORINAIR or other bottom-up methods should provide. The level of information requested should be similar for all reporting Parties. This may imply an agreement on a common reporting framework for basic and supplementary information (also in electronic formats).
IPCC standard data tables have been used by many Parties for the presentation of data, but in the IPCC Guidelines, the format has changed to "sectoral tables". Almost no Party provided the worksheets they used to estimate GHG emissions. If available, these worksheets provide more information than the IPCC standard data tables. However, it seems difficult for Parties to provide worksheets for most sectors.	It may be necessary to define for what sectors/gases worksheets or IPCC standard data tables should be requested.
The IPCC standard data tables require information on activity data used and aggregate emission factors that the sectoral tables do not provide. Parties which provided these tables presented a more transparent inventory.	If mandatory use of the IPCC standard data tables is agreed upon, it may be necessary to request the IPCC to develop such tables for the new or revised sectors of the IPCC Guidelines.

12. Paragraph 15:

With regard to possible double counting or non-counting of emissions, Parties should provide a brief description of how feedstocks have been considered in the industrial processes source category of the inventory, in particular in the production of iron and steel and non-ferrous metals, and in the chemical and petro-chemical industry. Parties should also provide a brief explanation of the way in which CO_2 emissions in the waste source category have been considered, in particular indicating whether the IPCC methodology has been followed in excluding CO_2 emissions from organic waste combustion or aerobic decomposition of biogenic products and including emissions from fossil-fuel based products (plastics and hydrocarbons).

Issues	Suggestions
No precise guidance on how to report feedstocks is given. Generally, the current guidance is not followed by most Parties.	Clearer guidance on the reporting of feedstocks may be necessary or this requirement may need to be deleted.
Feedstocks are either reported in industrial processes or in fuel combustion. The allocation of feedstock emissions and the way in which they are estimated are not reported in a transparent way. This could induce double counting and non-counting of emissions.	Guidance on formats to provide the required information on feedstocks may be necessary.
The distinction between CO_2 emissions from organic and fossil-fuel based products is often not made.	Very specific information is requested for a relatively insignificant source. This request may not be necessary, as it could be covered by a more precise reporting of feedstocks.

13. Paragraph 16:

To ensure transparency, enough information should be provided to allow the reconstruction of the inventory from national activity data, emission factors and other assumptions, and to assess the results. Annex I Parties should follow the IPCC Guidelines for National Greenhouse Gas Inventories with respect to the presentation of methodologies, activity data, emission factors and other assumptions. Standard data tables do not provide the level of detail necessary to enable the reconstruction of an inventory. In this connection, IPCC worksheet 1.1, or other equivalent documentation, indicating the assumptions used to estimate CO_2 emissions from fuel combustion, in line with the IPCC Reference Approach, should be provided.

Issues	Suggestions
The IPCC Guidelines do not give clear guidance on how to present information on methodologies, activity data, emission factors, etc.	See suggestions in paragraphs 11 and 15, above in this annex.
Only some Parties submitted IPCC worksheets or similar information for CO_2 emissions from fuel combustion. In addition, the IPCC Guidelines request the comparison of national CO_2 fuel combustion estimates with those obtained with the IPCC Reference Approach.	The IPCC request for the comparison of estimates for self-verification purposes could be included explicitly in the UNFCCC guidelines. The request to submit worksheets for estimates of CO_2 emissions from fuel combustion by the IPCC Reference Approach could be strengthened. The submission of all IPCC worksheets could be necessary, since worksheet 1.1 only covers information on CO_2 emissions from fuel combustion.

14. Paragraph 17:

In providing information on emissions from international aviation and marine bunker fuels, and in accordance with the IPCC Guidelines for National Greenhouse Gas Inventories, Parties should include such data, in a separate category, in their inventories of emissions on the basis of fuel sold and should, as far as possible, not include them in total national emissions.

Issues	Suggestions
The reporting of bunkers is not consistent among Parties. Some Parties do not report bunkers separately from other fuel combustion emissions.	More precise reporting requirements may be needed, such as more detailed information on methods used to estimate bunker emissions and the quantity of fuel sold to bunkers.
See also relevant conclusions of the SBSTA (see annex II, para. 5) and decisions of the COP (see annex II, para. 9(4)).	All decisions and conclusions need to be integrated into consistent guidance.

15. Paragraph 18:

If Parties wish in addition to present their inventory data in other forms, inter alia, greenhouse gas emissions per capita, this information could be provided in a section of the national communication dealing with basic data (national circumstances). If possible, it would also be desirable to include some information on historical trends (for example, emissions and removals over the period 1970 -1990) so as to put the inventory information in context.

Issues	Suggestions
The content of this paragraph is not directly referring to the use of the inventories for meeting commitments of the Convention or the Kyoto Protocol.	This paragraph could be included in another section of the guidelines, such as national circumstances.

16. Paragraph 19:

In providing information on sequestration and emissions of carbon in the land-use change and forestry sector, as well as in agricultural soils, Parties should provide the information in the worksheets provided in the IPCC Guidelines for National Inventories, or equivalent documentation. Emissions of other greenhouse gases associated with these activities should also be listed, as appropriate. Historical trends should be included where available. Even if Parties do not use the IPCC default methodology, the results should be presented using the IPCC reporting format.

Issues	Suggestions
There has been inconsistent reporting in the land-use change and forestry and agricultural soils sectors.	The outcome of the ongoing methodological work by the IPCC related to land-use, land-use change and forestry will be considered by the SBSTA as per decisions taken by the COP at its fourth session. Additional guidance may be needed at a later date. In spite of the diversity of existing methods to estimate these emissions, Parties could be urged to report emissions/removals from land-use change and forestry and agricultural soils using the IPCC reporting format.

Annex II

OTHER RELEVANT DECISIONS OF THE CONFERENCE OF THE PARTIES AND CONCLUSIONS OF THE SBSTA

1. The following paragraphs cite relevant decisions of the COP and conclusions of the SBSTA adopted subsequent to decision 9/CP.2. They are directly related to the reporting of GHG emission inventories. Some are of a general nature and some give precise instruction on reporting emission inventories. Procedural decisions and conclusions are not included. The relevant decisions and conclusions are listed in chronological order. The corresponding quoted paragraphs of the COP decisions and SBSTA conclusions are presented in parentheses.

Report of the SBSTA on its fourth session (FCCC/SBSTA/1996/20)

2. The SBSTA took note of the Revised 1996 Guidelines adopted by the IPCC for the reporting of national greenhouse gas inventory data, and decided that the Revised 1996 Guidelines should be applied by Annex I Parties on a voluntary basis for the inventories due in 1997 and on a mandatory basis for inventories due in 1998 and beyond. When applying the Revised 1996 Guidelines, these Parties should also use them to recalculate the base year greenhouse gas inventory. Annex I Parties are urged to submit updated time series data for the years in between. In providing greenhouse gas inventories due in the years 1997 and 1998, Annex I Parties should indicate clearly whether they use the 1995 Guidelines or the Revised 1996 Guidelines. Annex I Parties with economies in transition may phase in the Revised 1996 Guidelines one year later than other Annex I Parties, but not later than for the inventories due in 1999, at which time they should also recalculate their base year inventory and inventories for the years in between to the extent possible (FCCC/SBSTA1996/20, para. 30 (a));

3. The SBSTA encouraged Parties to report actual emissions of HFCs, PFCs and SF_6, given that these better reflect the real releases to the atmosphere and encouraged Parties which are not in a position to report actual figures to report potential emissions. Parties which report actual emissions should also include figures for potential emissions as a subset, for reasons of transparency and comparability (FCCC/SBSTA1996/20, para. 31).

4. The SBSTA stressed the necessity of reporting inventories in mass units without adjustments according to paragraph 12 of the annex to decision 9/CP.2. Adjustments are regarded as important information in relation to the monitoring of emission trends and the performance of policies and measures, and should be reported separately (FCCC/SBSTA1996/20, para. 53).

5. The SBSTA noted that there are three separate issues related to international bunker fuels: adequate and consistent inventories, allocation of emissions and control options. Appropriate allocation of responsibility for emissions from international bunker fuels would be connected to inventory and control issues. The SBSTA noted that eight options for allocation of bunker fuels were suggested in document FCCC/SBSTA/1996/9/Add.1, and considered that

options 1, 3, 4, 5 and 6 should be the basis for its further work on the issue. With respect to option 1, it should be considered to recognize the responsibilities of the international community to address issues related to international bunker fuels. The SBSTA took note of the work of the International Civil Aviation Organization (ICAO), as well as the work of the Annex I expert group on policies and measures to address these emissions. The SBSTA noted the role of ICAO and the International Maritime Organization (IMO) in addressing the control of international bunker fuel emissions, and the opportunity for Parties to work through these bodies. The SBSTA encouraged Parties to report emissions from international aviation and marine bunker fuels as two separate entries in their national communications, in accordance with the Revised 1996 IPCC Guidelines (FCCC/SBSTA/1996/20, para. 55).

Report of the SBSTA on its seventh session (FCCC/SBSTA/1997/14)

6. The SBSTA recalled decision 9/CP.2, requesting Annex I Parties to submit their national inventory data on an annual basis by 15 April of each year. In addition, the SBSTA invited Annex I Parties to make available to the secretariat by 6 June 1998, for purposes of comparison and transparency, their complete 1996 GHG inventories obtained using, when possible, best available methodologies and those obtained using the current IPCC default methodologies. The SBSTA requested the secretariat to draw upon the roster of experts to analyse and compare the results and assess the adequacy of information and the implications for meeting emissions limitation or reduction objectives, and to make them available for its ninth session (FCCC/SBSTA/1997/14, para. 16 (b)).

7. The SBSTA recalled decision 9/CP.2, which states that if Parties carry out any adjustments to inventory data, for example for climate variations or trade patterns in electricity, these adjustments should be reported in a transparent manner, with a clear indication of the method followed. Both adjusted and unadjusted data should be provided. The SBSTA also recalled that, at its fourth session, it had stressed the necessity of reporting inventories in mass units without adjustments, according to the guidelines, and had concluded that adjustments were to be regarded as important information in relation to the monitoring of emission trends and the performance of policies and measures, and should be reported separately (FCCC/SBSTA/1997/14, para. 21 (a)).

8. On the basis of the information in document FCCC/SBSTA/1997/9, the SBSTA further concluded that weather adjustments, in particular temperature adjustments, to national GHG inventories and projections might be a useful tool to understand the factors influencing emissions and to assess the effectiveness of policies and measures. For those purposes, individual Parties may choose whether adjustments are applied, in addition to reporting unadjusted inventory data, and, if so, which methods are chosen. The SBSTA encouraged Parties to share with others their experiences with the application of adjustments (FCCC/SBSTA/1997/14, para. 21 (b)).

Report of the COP on its third session (FCCC/CP/1997/7/Add.1)

9. Decision 2/CP.3:

"*The Conference of the Parties*,

...

1. *Reaffirms* that Parties should use the Revised 1996 Guidelines for National Greenhouse Gas Inventories of the Intergovernmental Panel on Climate Change to estimate and report on anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol;

2. *Affirms* that the actual emissions of hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride should be estimated, where data are available, and used for the reporting of emissions. Parties should make every effort to develop the necessary sources of data ;

3. *Reaffirms* that global warming potentials used by Parties should be those provided by the Intergovernmental Panel on Climate Change in its Second Assessment Report ("1995 IPCC GWP values") based on the effects of the greenhouse gases over a 100-year time horizon, taking into account the inherent and complicated uncertainties involved in global warming potential estimates. In addition, for information purposes only, Parties may also use another time horizon, as provided in the Second Assessment Report;

4. *Recalls* that, under the Revised 1996 Guidelines for National Greenhouse Gas Inventories of the Intergovernmental Panel on Climate Change, emissions based upon fuel sold to ships or aircraft engaged in international transport should not be included in national totals, but reported separately; and urges the Subsidiary Body for Scientific and Technological Advice to further elaborate on the inclusion of these emissions in the overall greenhouse gas inventories of Parties;

5. *Decides* that emissions resulting from multilateral operations pursuant to the Charter of the United Nations shall not be included in national totals, but reported separately; other emissions related to operations shall be included in the national emissions totals of one or more Parties involved."

Report of the SBSTA on its eighth session (FCCC/SBSTA/1998/6)

10. The SBSTA noted that the Kyoto Protocol includes provisions related to GHG inventory methods. The SBSTA recognized that methodological issues arising from the Protocol including, for example, guidance for estimating and reporting HFCs, perfluorocarbons and sulphur hexafluoride, need to be evaluated. The SBSTA encouraged the IPCC-OECD-IEA Inventories Programme to give high priority to completing its work on uncertainty, as well as to prepare a report on good practices in inventory management and to submit a report on these issues for consideration by the SBSTA, if possible by COP 5. The SBSTA encouraged the

secretariat to continue its close collaboration with other relevant bodies, such as the Technology and Economic Assessment Panel of the Montreal Protocol, on technical and methodological issues (FCCC/SBSTA/1998/6, para. 40 (e)).

Report of the SBSTA on its ninth session (FCCC/SBSTA/1998/9)

11. The SBSTA requested the secretariat to prepare a report, which addresses clarifications, additions and amendments to the revised guidelines for the preparation of national communications by Annex I Parties (decision 9/CP.2), particularly the GHG inventory section, taking into consideration information from both workshops, for its tenth session. (FCCC/SBSTA/1998/9, para. 51 (e)).

12. The SBSTA requested the secretariat to prepare an initial report on elements of a review process related to GHG inventories, including in-depth reviews, based on the issues identified at both workshops and submissions from Parties, for consideration at its tenth session, with a view to forwarding relevant information to the SBI. The SBSTA invited Parties to submit information related to elements of a review process by 1 March 1999 (FCCC/SBSTA/1998/9, para. 51 (f)).

13. The SBSTA requested the secretariat to provide information to the SBSTA, at its tenth session, on emissions resulting from fuel sold to ships or aircraft engaged in international transport, taking into account the ongoing work of the International Maritime Organization (IMO) and the International Civil Aviation Organization (ICAO). It took note of the information provided by ICAO and requested the secretariat to invite representatives of ICAO and IMO to report on their work to the SBSTA at its tenth session (FCCC/SBSTA/1998/9, para. 51 (i)).

14. The SBSTA encouraged the IPCC-OECD-IEA Programme on National Greenhouse Gas Inventories to make available to the SBSTA as soon as possible the results of the expert meetings on national feedback on the Revised 1996 IPCC Guidelines and on managing uncertainty in national GHG inventories (FCCC/SBSTA/1998/9, para. 51 (j)).

15. The SBSTA requested the secretariat to consult with the IPCC through the Joint Working Group on a comprehensive joint plan for the inventory programme covering scientific and operational aspects and including a clear division of responsibilities between the IPCC and the UNFCCC (FCCC/SBSTA/1998/9, para. 51 (k)).

Report of the COP on its fourth session (FCCC/CP/1998/16/Add.1)

16. Decision 11/CP.4:

"*The Conference of the Parties*:

...

2. *Requests* Annex I Parties to submit to the secretariat, in accordance with Article 12.1 and 12.2 of the Convention:

(a) A third national communication[1] by 30 November 2001 and subsequent national communications on a regular basis, at intervals of three to five years, to be decided at a future session. The Parties referred to in paragraph 1 [of the decision] should submit their second and subsequent national communications by the same dates;

(b) National inventory data on emissions of greenhouse gases by sources and removals by sinks on an annual basis by 15 April for the period up to the last but one year prior to the year of submission;

(c) Summary tables of national inventory data in electronic format and in hard copy. Additional and explanatory information should also, to the extent possible, be submitted in electronic format, as well as a hard copy."

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[1] This term includes communications from the regional economic integration organization included in Annex I to the Convention.